Missile Defense Agency

Fiscal Year (FY) 2004/FY 2005 Biennial Budget Estimates Submission

Press Release

Missile Defense Agency

Fiscal Year 2004/FY 2005 Biennial Budget Estimates Submissions

Overview

Outline

This budget overview is intended to summarize and accompany our budget. It can, however, serve as a stand-alone, top-level description of the BMD Program for informed readers. The overview describes our priorities, the budget structure, management and oversight processes, and program goals. It also includes Future Years Defense Program (FYDP) highlights.

MISSILE DEFENSE AGENCY
FISCAL YEAR 2004/FY 2005 BIENNIAL BUDGET ESTIMATES SUBMISSION
OVERVIEW

I. INTRODUCTION

Our goal is to defend the United States, and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. Our budget submission supports an aggressive RDT&E program to accomplish that goal. In December 2002 the President directed the Department of Defense (DoD) to begin fielding an integrated and evolutionary Ballistic Missile Defense System (BMDS) of initial modest capability. As a result, our budget has now been expanded to include adding assets to support initial defensive operations in response to the President's direction.

While there is only a single BMDS, there is no final or fixed missile defense architecture. We are employing an evolutionary approach to missile defense development that is straightforward:

- Field an initial capability in 2004-05 in accordance with the President's direction;
- Add networked, forward-deployed ground-, sea-, and space-based sensors to make the interceptors more effective in 2006-07;
- Add interceptors;
- Add layers of increasingly capable weapons and sensors, made possible by emerging technologies.

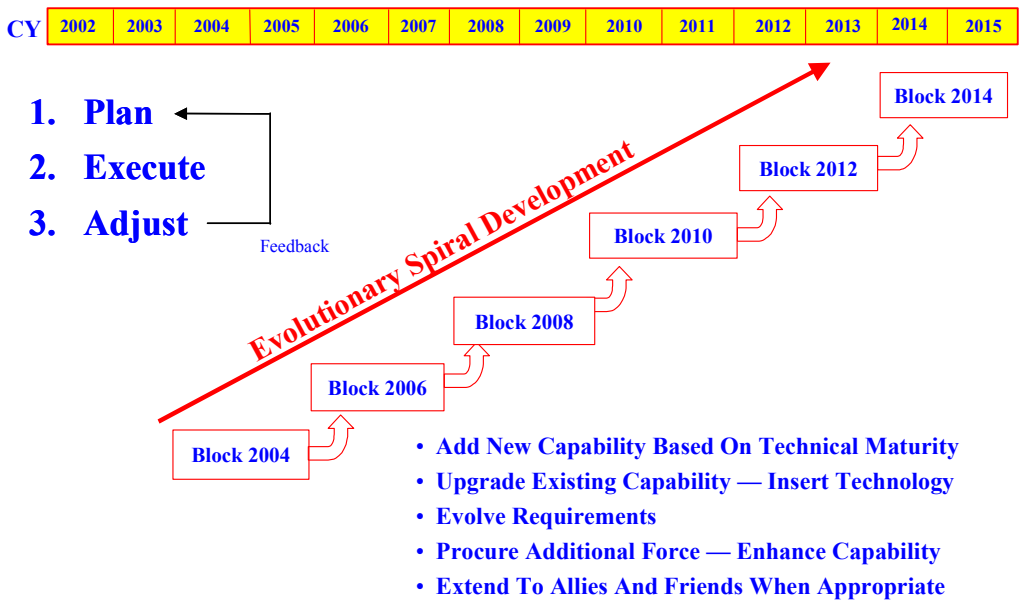
The President's decision to implement this approach was enabled by our recent successes. Over the last two years, we have achieved four for five successful long-range, ground-based intercepts; three for three successful ship-based exoatmospheric intercepts; five for seven successful short-range, ground-based intercepts (PAC-3); and the first flight of the Airborne Laser aircraft. In total, in those same two years, we have conducted 55 flight tests of which 17 were intercept tests, and 60 ground tests. In the next two years we plan to conduct an additional 68 flight tests and 58 ground tests. Additionally, free from the constraints of the Anti-Ballistic Missile Treaty, we have expanded testing programs to include previously prohibited activities such as the testing of sea-based radars (Aegis SPY-1), Theater High Altitude Area Defense (THAAD) radar, and airborne sensors (Airborne Laser Infrared Search and Track sensor) against long-range targets. This budget will allow us to continue this progress.

This budget overview is intended to summarize and accompany our budget, the development of which had been focused exclusively on demonstrating missile defense capabilities in an integrated testing environment. The overview describes the budget structure, the management and oversight processes, and the program goals. It also includes Future Years Defense Program (FYDP) highlights.

II. IMPROVED PROGRAM WORK BREAKDOWN STRUCTURE (WBS)

We have organized the program into two-year time windows, or Blocks, consisting of packages of capabilities that have been developed over several years. A capability's specification as part of a particular Block means that it would be ready during the two-year window to be inserted into the BMDS Test Bed for system integration and testing. For example, Block 2004 represents 2004-2005, Block 2006 represents 2006-2007, and so on. Figure 1 below illustrates the Block evolutionary concept.

Figure 1: BMD Evolutionary Development



To align program activities by Block, we have implemented a product-oriented Work Breakdown Structure (WBS). This new WBS framework, illustrated in Figure 2 below, enables us to organize and manage more effectively the BMDS scope, schedule and budget.

The "Mission Area Investments" of the WBS (Systems Engineering, Command and Control/Battle Management and Communications, Test and Targets, International Programs, Advanced Concepts, and Program Operations) represent investments into major functional areas of the BMD mission, spanning all capability Blocks. These indispensable integrating activities make up the overall program management, system design and engineering, testing and test infrastructure, advanced concept development and innovation, and allied/international participation for the whole program.

Figure 2: Product-Oriented Work Breakdown Structure

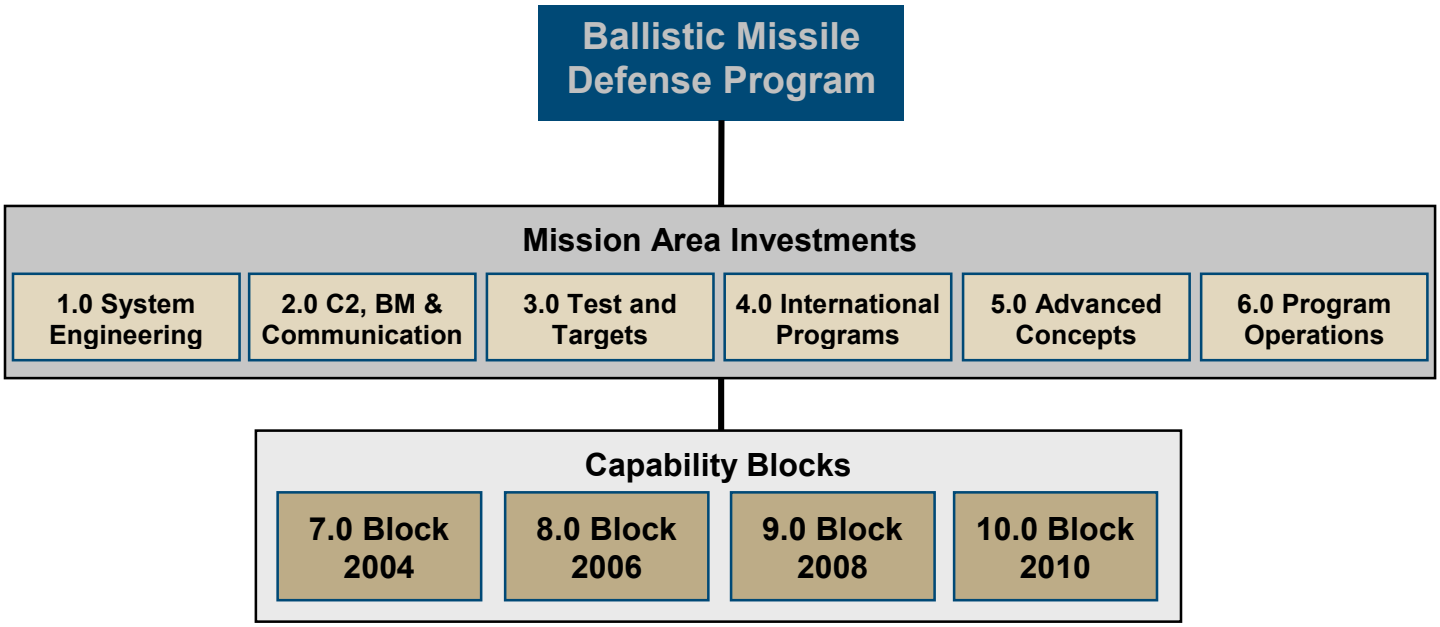
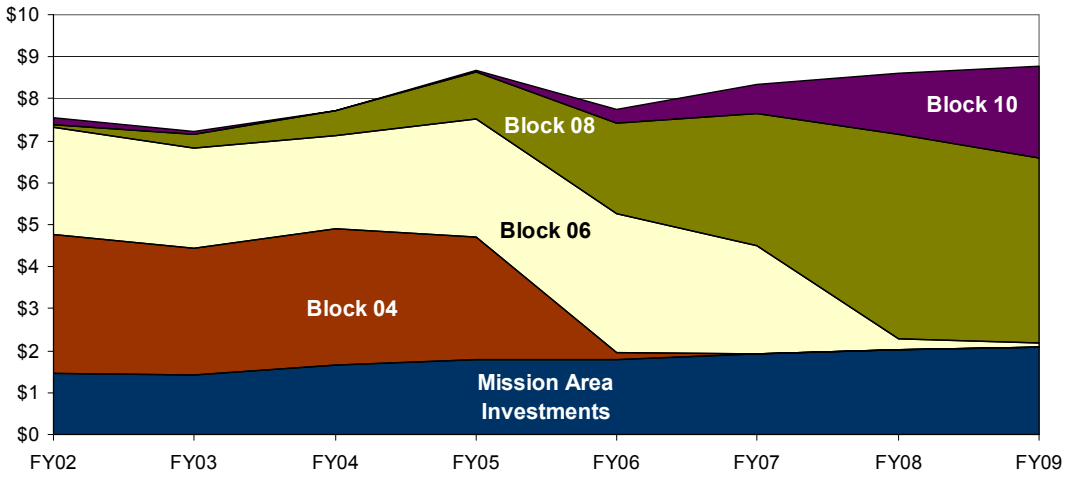


Figure 3 illustrates our entire FY02-FY09 investment in each of the BMDS Blocks, as well as funding for our Mission Area Investments. The chart also highlights our significant investment for Blocks 2004, 2006, 2008, and Block 2010 in the years prior to the current FYDP.

Figure 3: Resources by Block Across the FYDP 04-09 ($B)



Finally, because development activity typically takes more than two years, there is significant activity occurring in FY 2004-05 that contributes to Blocks 2006, 2008 and 2010. This activity is highlighted in table 1 on the next page.

Table 1: Significant FY 2004-05 Activity Contributing to Blocks 2006, 2008 and 2010

	FY 2004-05
BMDS Interceptor (Block 2008 and beyond)	• Demonstrate boost/ascent phase intercept sensor, fire control and C2BMC capabilities in BMDS Test Bed • Complete ground-based boost/ascent element design reviews 1 & 2 • Define BMDS Interceptor evolution concepts for sea-basing, air-basing and advanced midcourse discrimination • Award up to three fixed price contracts in 4Q FY 2004 to potential space prime contractor/integrators • Begin Space Test Bed design and development • Execute the Near-Field Infrared Experiment (NFIRE), and continue operations throughout FY04-05
Sensors (Block 2006 and beyond)	• Award BMDS Family of Radar Configuration Elements (FORCE I) • Define a BMDS sensor architecture • Complete definition and acquisition strategy for Block 2006/Block 2008 Family of Radar configurations • Validate algorithms for BMDS FORCE I • Conduct Design Reviews for BMDS Family of Radars • Conduct STSS Block 2006 Hardware Reactivation Review, Delta PDR and Delta CDR • Award contract for STSS Block 2010/Initiate STSS Block 2010 spacecraft design

ABL (Block 2006 and beyond)	• Award contract for ABL Block 2006
	  • Start design and software development of first task order for enhanced BMC4I capability
	  • Conduct demonstrations of enhanced BMC4I capabilities in a ground test facility
	  • Award task order for and conduct post-development ABL Block 2004 flight testing and aircraft sustainment
	• Continue ABL Block 2008 development effort
	  • Conduct System Requirements Review, PreliminaryDesign Review, and Critical Design Review
	  • Begin modification of commercial "green" 747-400 aircraft
	  • Begin fabrication of weapons system components
	  • Take delivery of long lead optics
	  • Conduct Block 2008 risk reduction activities in ground test facility (known as the "Iron Bird")

THAAD (Block 2006)	• Begin/continue fabrication, assembly and test of Missile, Launcher and Command and Control/Battle Management (C2BM) hardware in preparation for first Block 2006 flight test • Conduct System Integration Laboratory Hardware-in-the-Loop integration activities of hardware and software in preparation of Block 2006 flight testing • Begin/continue upgrades to Missile, Radar, Launcher and C2BM software • Conduct supportability demonstrations on Launcher, C2BM and Radar • Develop/conduct training for Staff Planners and other Military Occupational Specialties (MOS) • Support Production Qualification Testing (PQT) planning • Conduct Pacific Missile Range Facility flight planning and integration • Continue THAAD Range Operations at White Sands Missile Range • Acquire targets for Flight Test Program • Plan for Operational Assessment for Block 2006
Targets & CMs (all future Blocks)	• Award Targets Prime Contract • Complete Long Range Air Launch Target – 1 test drop; 1 risk reduction flight • Begin/Complete development of a Multi-mode Medium Range Target; Conduct Risk Reduction Flight • Complete Short Range Air Launch Target development – Conduct Risk Reduction Flight • Complete development of Small Low Observable payload suite to support GMD flight tests • Develop payloads for Critical Measurements/Countermeasures Program tests/experiments • Complete Mid-Course Fly Along Sensor Package development • Begin development of the Enhanced Target Delivery System (heavier lift, greater range) • Begin Medium & Long Range Liquid Fuel Booster development • Begin development of Strategic Range Air Launch Target • Begin Long Range FMA acquisition / development
Advanced Concepts (Block 2008 and beyond)	• Continuing as Executing Agent for High Altitude Airship (HAA) Advanced Concept Technology Demonstration and prepare to demonstrate HAA in FY05 • Prepare for a flight experiment of the Miniature Kill Vehicle in FY05
Test & Evaluation	• Acquire transportable range safety/telemetry collection systems • Execute dedicated flight tests CMCM-1 and CMCM-2 to support Block 2006/2008 system definition • Conduct Missile Defense Integration Exercises 4a and 4b to measure BMDS interoperability and initial integration • Conduct one BMDS Wargame per year to develop CONOPS and Tactics, Techniques and Procedures • Conduct one Integrated Ground Test per year to provide BMD System readiness testing, measure integration and support system capability assessments
Systems Engineering	• Finalize Block 06 Capability Specification • Develop Preliminary Block 08 Capability Specification • Recommend Block 10 Development Objectives • Update Technical Objectives and Adversary Capabilities

III. BMD PROGRAM GOALS

The 2002 and 2003 Defense Authorization Acts require us to specify cost, schedule, testing and performance goals and developmental baselines in the FY04 President's Budget justification materials. Our goals are expressed in terms required by the President's Management Agenda clearly linking budget (inputs) and performance (outputs and outcomes) measures. We intend to review program progress relative to these planning measures annually with the General Accounting Office, also called for in statute**.**

Block 2004 Development Goals

Table 2, below, illustrates Block 2004 program goals underpinning our budget submission. These goals were relevant prior to the President's December announcement, and remain relevant now. Before the announcement, the FY04 President's Budget would have reflected the development of a set of capabilities, planned for the BMDS Test Bed, that could be made operational with continued development and testing in Blocks 2006 and 2008.

Table 2: Block 2004 RDT&E Development Goals

Threat Class	Input Direct BMDS - $4.7B	Block 2004 Toolbox (Output)			Projected Outcome	Metrics
		Weapon	Sensor	C2BMC		
Long Range	• Develop tools to defend US, friends and allies, from long-range attack	GBI ABL Block 2004 Shooter	Cobra Dane Sea Based XBR UEWR Aegis AN/SPY-1 Radar DSP TPS-X Radar THAAD Radar ABL Block 2004 Sensor	BMDS C2BMC GMD BMC3 Aegis BMD BMC3 TPS-X BMC3 THAAD BMC3 ABL BMC4I	A set of operational missile defense capabilities to defend the United States, forward deployed forces and friends & allies against ballistic missile attack	Classified Data to be Provided Under Separate Cover.
Intermediate Range	• Develop tools to defend US, allies and friends from intermediate-range missile attacks	GBI ABL Block 2004 Shooter	Sea Based XBR UEWR Aegis AN/SPY-1 Radar DSP TPS-X Radar THAAD Radar ABL Block 2004 Sensor	BMDS C2BMC GMD BMC3 Aegis BMD BMC3 TPS-X BMC3 THAAD BMC3 ABL BMC4I		
Medium Range	• Develop tools to defend US, allies and friends from medium-range missile attacks	Aegis SM-3 Block 1 & 1A ABL Block 2004 Shooter PAC-3 THAAD	Sea Based XBR UEWR Aegis AN/SPY-1 Radar DSP TPS-X Radar THAAD Radar ABL Block 2004 Sensor Patriot AN/MPQ-53 Radar	BMDS C2BMC GMD BMC3 Aegis BMD BMC3 TPS-X BMC3 THAAD BMC3 Patriot BMC3 ABL BMC4I		
Short Range	• Develop tools to defend US, deployed forces, critical assets and population centers home and abroad from short-range attack	Aegis SM-3 Block 1 & 1A ABL Block 2004 Shooter PAC-3 PAC-2 GEM & GEM+ THAAD	Aegis AN/SPY-1 Radar DSP TPS-X Radar THAAD Radar ABL Block 2004 Sensor Patriot AN/MPQ-53 Radar	BMDS C2BMC Aegis BMD BMC3 TPS-X BMC3 THAAD BMC3 Patriot BMC3 ABL BMC4I		

Block 2004 Initial Defensive Capability Goals

In December 2002, the President directed the initial fielding of a limited BMD capability, and Office of the Secretary of Defense added $1.5B to our budget to respond to that direction. Table 3 illustrates our goal for initial defensive operations of an expanded capability based on the development program we have had in place and the Block 2004 BMDS Test Bed.

Table 3: Block 2004 Initial Defensive Capability Goals

<table>
<tr><th rowspan="2">Threat Class</th><th rowspan="2">Adversary</th><th rowspan="2">Input *$6.2B Cost</th><th colspan="3">System Capability (Output)</th><th rowspan="2">Projected Outcome</th><th rowspan="2">Metrics</th></tr>
<tr><th>Weapon</th><th>Sensor</th><th>C2BMC</th></tr>
<tr><td>Long Range</td><td>Long-Range Ballistic Missiles</td><td>Develop specific architecture to defend the US from LRBM attack</td><td rowspan="2">Up to 20 GBI</td><td rowspan="2">DSP

1 Upgraded Cobra Dane Radar

2 UEWR

15 Aegis BMD Surveillance and Tracking Ships</td><td rowspan="2">BMDS C2BMC</td><td>Delivers an Architecture that Provides a Capability to Defeat LRBMs</td><td rowspan="4">DA – Defended Area

LAD – Launch Area Denied

P_{ES} – Probability of Engagement Success

Specific Metrics are Classified; Data to be Provided Under Separate Cover.</td></tr>
<tr><td>Intermediate Range</td><td>Intermediate Range Ballistic Missiles</td><td>Defend US deployed forces, allies and friends from IRBM attack</td><td>Delivers an Architecture that Provides a Capability to Defeat IRBMs</td></tr>
<tr><td>Medium Range</td><td>Medium-Range Ballistic Missiles</td><td>Defend US deployed forces, allies and friends from MRBM attack</td><td rowspan="2">3 Aegis BMD Cruisers with up to 20 SM-3 Missiles

6Bn / 340 PAC-2 GEM Missiles

4 Bn / 192 PAC-3 Missiles</td><td rowspan="2">15 Aegis BMD Surveillance and Tracking Ships

11 Patriot AN / MPQ-53 Radars

43 Patriot AN / MPQ-65 Radars</td><td rowspan="2">Patriot BMC2 (ICC / ECS)</td><td>Delivers an Architecture that Provides a Capability to Defeat MRBMs</td></tr>
<tr><td>Short Range</td><td>Short-Range Ballistic Missiles</td><td>Defend US deployed forces, allies and friends from SRBM attack</td><td>Delivers an Architecture that Provides a Capability to Defeat SRBMs</td></tr>
<tr><td colspan="8">Note: The $6.2B cost includes a $1.5B plus-up in addition to the $4.7B already budgeted for Block 04 RDT&E.</td></tr>
</table>

Block 2004 Goals Including Potential Enhancements to the Initial Defensive Capability

Table 4 highlights the cumulative performance of the BMDS with additional assets from the development program. Specifically, the performance assumes the potential diversion of ABL as a sensor, the Sea-Based X-Band Radar platform, and two THAAD radars, which are included in the Block 2004 Development Toolbox, to an operational role.

Table 4: Block 2004 Goals including Potential Enhancements to the Initial Defensive Capability

<table>
<tr><th rowspan="2">Threat Class</th><th rowspan="2">Adversary</th><th rowspan="2">Input</th><th colspan="3">Architecture Capability (Output)</th><th rowspan="2">Projected Outcome</th><th rowspan="2">Metrics</th></tr>
<tr><th>Weapon</th><th>Sensor</th><th>C2BMC</th></tr>
<tr><td>Long Range</td><td>Long-Range Ballistic Missiles</td><td>Develop specific architecture to defend the US from LRBM attack</td><td rowspan="2">Up to 20 GBI</td><td rowspan="3">DSP

1 SBX

1 Upgraded Cobra Dane Radar

2 UEWR

ABL Sensor

15 Aegis BMD Surveillance and Tracking Ships</td><td rowspan="3">BMDS C2BMC</td><td>Delivers an Architecture that Provides a Capability to Defeat LRBMs</td><td rowspan="4">DA – Defended Area

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ABL Sensor

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Patriot BMC2 (ICC / ECS)

ABL BMC4I</td><td>Delivers an Architecture that Provides a Capability to Defeat MRBMs</td></tr>
<tr><td>Short Range</td><td>Short-Range Ballistic Missiles</td><td>Defend US deployed forces, allies and friends from SRBM attack</td><td>Delivers an Architecture that Provides a Capability to Defeat SRBMs</td></tr>
</table>

Block 2004 Development and Initial Defensive Capability Schedule Goals

Set Block BMDS Configuration Definition	2003
Stand Up BMDS Block 2004 Test Bed	2004
Complete 1st GBI Installation in Alaska, GBI in California	2004
Complete Surveillance and Tracking Upgrade of up to 9 Aegis BMD Destroyers	2004
Complete C2BMC Operational Suite(s)	2005
Complete System Integration/Verification Testing	2005
Deliver Up To 20 SM-3 Missiles	2005
Complete Upgrade of 3 Aegis BMD Cruisers with SM-3 Missile Capability	2005
Complete Surveillance and Tracking Upgrade of up to 6 Additional Aegis BMD Destroyers	2005
Complete 2nd GBI Installation in Alaska	2005
Complete Sea-Based X-Band Radar	2005
Complete Upgrade of Early Warning Radar	2005
Complete SIFT for Block 04	2005

Block 2004 Cost Goal

The projected Block 2004 cost to completion for development, testing and delivery of this initial capability is $6.2 billion (see chart below, $M).

FY04	FY05	To Completion (FY06-09)	FYDP FY04-09
3212	2868	163	6242

RDT&E is the appropriate funding type because our initial fielding at this time expands our RDT&E program and the physical architecture of the BMDS Test Bed, already funded under RDT&E.

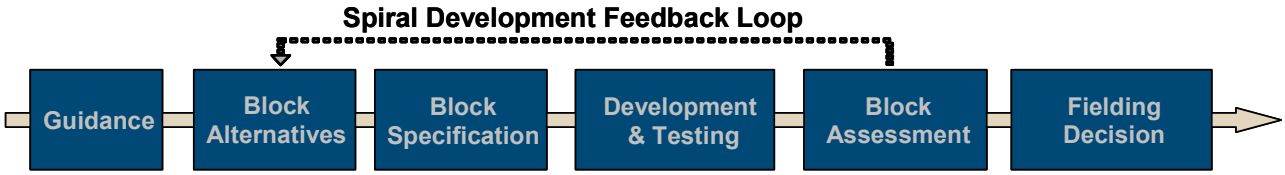
We will oversee and manage the assets providing initial defensive capability and the development and testing activities. Beyond this initial fielding, we will continue research and development to mature overall capabilities and conduct realistic testing against increasingly stressing targets, including countermeasures.

Cost and schedule development baselines for specific weapons, sensors, and command and control, and battle management (C2BM) components are described in the budget justification (R-2A, -3, -4) documentation for each Block configuration. Each component will undergo a series of developmental tests, as part of its Element program (e.g., GMD, Aegis BMD programs), and/or as an integrated system-wide test. Specific test article quantities planned and complete testing schedules are also included in the accompanying budget details.

IV. DEFINING THE BMDS – SYSTEM ENGINEERING

To develop a single, layered BMD System, we use the capability-based system engineering and integration process summarized in Figure 4 below. This process is both iterative and evolutionary as it is repeated to define successive Blocks of the BMDS. We established the Missile Defense National Team (MDNT), which consolidates the best personnel the nation has to offer from government, Federally Funded Research & Development Centers (FFRDCs) and industry, to focus on the design, engineering, integration, and risk management of the BMDS.

Figure 4: The MDA System Engineering Process



The detailed definition of a BMDS Block begins with high-level assessments based on key inputs and documentation from the developer, the users and threat communities: the Technical Objectives and Goals (TOG) document, which describes desired BMDS attributes, i.e., what the System needs to do; the Adversary Capability Document (ACD) and the countermeasures focus team (Red/White/Blue/Black Teams), which describe parametrically the possible range of threat systems and attributes to be defeated by the BMDS; and the current RDT&E "toolbox" configuration (baseline of weapon, sensor, command and control capabilities). The MDNT engineers establish a wide-range of possible threat scenarios to conduct risk analyses and to define System capability or performance gaps. These gaps present opportunities for subsequent investment and development to evolve the capability from previous Block(s). The system engineer presents alternatives and analyses through a series of senior technical reviews (Alternative Review Board, Engineering Review Board, System Definition and Configuration Control Board) resulting in (1) the selection of the toolbox components for the Block under consideration and (2) updates to the corresponding Block goals, plans, and budgets.

The MDNT also translates these broad Block performance goals into detailed BMDS Block engineering requirements captured in the BMD System Capability Specification (SCS) document. In addition to the aggregate Block performance specifications, the BMD SCS also defines requisite Element and Component (individual weapon, sensor, and command and control platforms) engineering performance requirements, as well as verification and testing objectives, which may drive lower-level Element Capability Specifications (ECS) ultimately placed on the respective prime contract(s) for development and testing. This process will ensure the

availability to the Combatant Commanders of a single, integrated, layered missile defense, particularly an overarching Command and Control/Battle Management (C2BM) system. A decision that a block capability is ready for potential fielding is based on a disciplined, event-driven process that includes, among other things, a rigorous testing program and sound risk management activities.

The DoD Senior Executive Council (SEC), chaired by the Deputy Secretary of Defense, will consider such decisions, and make recommendations to the Secretary of Defense on fielding capability and the nature of initial or follow-on defensive operations. The SEC relies on the Missile Defense Support Group (MDSG) to aid in its decision process.

V. BMD MANAGEMENT

The Department now fully utilizes the MDSG to promote insight and to support the Department's decision process. The MDSG met over 20 times in the past year. MDSG membership includes principals from Office of the Under Secretary of Defense for Acquisition, Technology & Logistics, Office of the Under Secretary of Defense for Policy, Office of the Under Secretary of Defense/Comptroller, Joint Staff, Assistant Secretary of Defense for Command Control Communications & Intelligence, General Counsel, Office of the Director for Operational Testing & Evaluation, Program Analysis & Evaluation, Cost Analysis Improvement Group, and the Services. MDSG members have insight into every aspect of the BMD Program and are the primary means for conducting and coordinating all department-level analyses or reports on missile defense. Staff-level analysts comprising the MDSG Working Group receive periodic management reports and frequently attend our internal program progress reviews. Additionally, we have briefed and continue to consult the Joint Requirements Oversight Council (JROC).

This Administration, under the auspices of the Office of Management and Budget (OMB), in implementing the President's Management Agenda, recently evaluated our emerging management systems and practices. Applying OMB's Program Assessment Rating Tool (PART), we received high marks for designing and implementing a focused program based on sound strategic planning activities, establishing measurable planning and success criteria for the program of work, and capturing and assessing broad-based program results to guide resource allocation decisions. We will also implement DoD's Management Initiatives for - Establishing and Tracking DoD Performance Results, and – Budget & Performance Integration, to enhance performance management. Once we re-baseline our major development contracts in Spring 2003 and the Department completes large-scale financial systems upgrades, we will achieve top marks for overall program effectiveness.

VI. DEVELOPMENT PROGRAM HIGHLIGHTS BY BLOCK

This section provides Block highlights for FY 2004-05. As would be expected, there is significant activity in FY 2004-05 for near-term blocks. Likewise, for later Blocks (Block 2010 for instance), highlights are fewer in number. Nevertheless, there is FY 2004-05 activity even for Blocks 2006, 2008, and 2010, as capabilities are typically developed over the course of many years.

Block 2004

This Block program of work continues development and integration of components and facilities in the BMDS Test Bed to demonstrate layered missile defense capabilities against all ranges of threat. Block 2004 RDT&E funding is focused on those capabilities directed by the President for operational use in FY 2004-05.

The capability that had been planned for the BMDS Test Bed will be augmented by additional ground-based interceptors at Fort Greely, AK and Vandenberg AFB, CA, and an additional upgraded early warning radar. Design and development of a fully tactical BMD capable weapon system will be completed and logistic support elements added to permit sustained operations at sea with up to 20 SM-3 missiles loaded aboard three Aegis cruisers by the end of 2005. We have also planned for fielding up to 20 additional SM-3 by the end of 2007 if directed to acquire the missiles. Fifteen (15) Aegis warships will be modified with improved SPY-1 radar for surveillance and track capability. Aegis BMD Block 2004 development includes the conduct of a SRBM low exoatmospheric flight test to define the lower bounds of the Aegis BMD element battle space against short range ballistic missiles. This budget request also funds the personnel and equipment to operate these initial capabilities in the 2004-05 time frame. This initial capability would be added to point defense capabilities provided by the PATRIOT PAC-3 system currently being fielded (FY04 funding is in the Army's budget request).

The Block 2004 budget request also funds major RDT&E capability demonstrations, integration tests, and experiments. The products and findings of these activities not only add robustness and confidence to the initial Block 2004 capabilities, but also serve to refine designs, improve capabilities, and establish confidence for subsequent Block developments and fielding opportunities:

- **Boost:** Ground testing of the first ABL aircraft, the first flight of the complete ABL Block 2004 weapons system, a successful track and high-energy laser engagement of an instrumented missile alternative, culminating with a lethality demonstration.

- **Midcourse:** Sea-based X-band Radar introduction into the BMDS Test Bed to increase test capacity and realism against stressing long-range targets and countermeasure suites.

- **Terminal:** Improved THAAD radar and missile flight tests against short and medium range threats, to include BMC3 with interactive defense planning and interoperability. A total of four exoatmospheric flight tests are planned for FY 2004-05.

- **Sensors:** Continue experiments with extant sensor systems (e.g., THAAD Radar, ABL IR Search and Track) in broad-based BMDS applications and scenarios. First multi-sensor data fusion testing to replicate the processing and interfaces of infrared (IR), visible, and radar sensors to develop and demonstrate algorithms for near-real-time IR and IR-radar fused data for the BMD System battle manager.

- **BMDS Product:** Conduct command and control (C2) demonstrations of situational awareness, battle management, track correlation, and pre-planned response options. Will demonstrate communications among C2 nodes, BM nodes, and weapon and sensor systems. Will continue working with the Services, the Combatant Commands, and OSD, to ensure BMDS interoperability with legacy and planned DoD command, control and communications systems and standards such as Global Command and Control System (GCCS), Global Information Grid (GIG) and Link 16. Hercules-developed advanced target detection and tracking algorithm products, specifically two algorithms for vehicle handover and track association.

- **Test and Targets:** Major system exercises and tests include: BMDS Wargame 04 to develop CONOPS and Tactics, Techniques and Procedures; Missile Defense Integration Exercises 04a and 04b to measure BMDS interoperability and initial integration; and two major System Integration Flight Tests (SIFTs), the first of which is the initial large-scale integration event and tests C2BMC during multiple element flight tests. Targets and Countermeasures activities for Block 2004 will include the development of full-up target systems to support BMDS and element testing; development of payload suites for Critical Measurements and Countermeasures (CMCM) flight tests and target risk reduction flights; and the maintenance, aging, surveillance, refurbishment and routine testing of existing Government Furnished Equipment (GFE) boosters.

Table 5: Block 2004 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2004	21	80	114	79	0	0	0	0	194	295
Hercules Block 2004	0	0	18	27	0	0	0	0	46	46
Joint Warfighter Support Block 2004	0	0	24	13	0	0	0	0	37	37
Test & Evaluation Block 2004	47	57	37	33	0	0	0	0	70	174
Targets & CM Block 2004	75	104	197	170	0	0	0	0	367	547
THAAD Block 2004	808	888	622	635	65	0	0	0	1322	3018
GMD Test Bed Block 2004	636	452	1205	868	0	0	0	0	2073	3161
Aegis BMD Test Bed Block 2004	413	440	648	894	98	0	0	0	1640	2492
ABL Block 2004	454	348	345	150	0	0	0	0	494	1296
TOTALS	2454	2369	3212	2868	163	0	0	0	6242	11065

*Numbers may not add exactly due to rounding.

Block 2006

This Block program of work continues development to improve existing capabilities and to provide new capabilities, which could be added to those fielded in Block 2004. For existing capability, the focus will be on evolving and integrating the capability such that we can achieve the first integrated and layered BMDS. For new capabilities, the focus will be on attaining a level of maturity such that these new capabilities may undergo comprehensive and operationally realistic system integration and testing in the BMDS Test Bed.

By developing and integrating additional weapons, sensors, and C2BM tools, we will demonstrate greater protection for the U.S., as well as deployed forces, friends, and allies. We will maintain the straightforward method for improving defenses in Block 2006: add a new radar that can be deployed, at sea or on land, close to the threat; add midcourse radar to begin layering of radar sensors; add initial space-based sensors; add THAAD interceptors for endoatmospheric and exoatmospheric layering against short and medium range threats as they transition from the midcourse to the terminal phase; network these capabilities by focusing on a C2BMC "backbone" for improved interoperability; and improve existing capabilities. Throughout this block, our demonstration and validation efforts will focus on integrated flight tests, with added realism and more stressing threat countermeasures. Of note, Block 2006 is the first time we have significant investment in the Space Tracking and Surveillance System (STSS), formerly Space-Based Infrared System-Low (SBIRS-L).

The following are several significant program objectives underpinning the budget request for Block 2006 (see table 6):

- **Boost:** Conduct software and limited hardware improvements to enhance the integration of the ABL Block 2004 aircraft into the BMDS Test Bed; and expand flight testing and intercept capabilities. Block 2006 will test against the wider range of threats and improve integration of the BMDS Boost and Midcourse layers.

- **Midcourse:** Complete prototype hardware and software maturation of all GMD interceptor, sensor, and BMC3 components, and continue ground and flight testing to demonstrate added weapon and discrimination performance, and interfaces with distributed (external) sensors. In addition, complete upgrade of EWR at Thule AB, Greenland. Continue Aegis BMD flight missions to include remote engagements of targets using tactical data links, increasing the battlespace to provide defense against IRBMs. Block 06 radar discrimination development will be accomplished using the Aegis BMD discrimination test bed, which includes narrow and wide-bandwidth radar functions, and a BMD radar signal processor. Prototype BMD signal processors will be tested aboard Aegis ships with SPY-1 radar modifications. Continue our cooperative BMD research with the Japan Defense Agency with focus on the enhancement of the SM-3, two joint flight tests of the advanced nosecone in FY 05-06, and planning for future co-development.

- **Terminal:** Block 2006 flight tests begin in the third quarter, FY06, and continue through first quarter, FY08, with a total of five flight tests. Improve interceptor endgame, and

demonstrate robust radar, discrimination (both exoatmospheric and endoatmospheric) capability against increasingly complex targets. Demonstrate salvo firing doctrine, as well as survivability in a full spectrum of tactical missile environments.

- **Sensors:** Validate the BMDS Family of Radar (FOR) concept of forward deployment and sensor layering with midcourse radars; continue the development, test, and assessment of associated algorithms; and provide an initial defensive capability for early Block 2006. These initiatives will leverage existing radars and technologies to the maximum extent practical. Additional radar configurations will be procured as necessary to satisfy these Block 2006 objectives. Launch two low-earth orbit satellites equipped with infrared and visible sensors in FY07 to validate space-based sensor concepts for target acquisition, tracking, and discrimination, and to provide a space node for the BMDS Test Bed to support data fusion, radar/sensor cueing over-the-horizon, and interceptor handover and fire control.

- **BMDS Products:** With Project Hercules, provide for enhanced Forward-Based Sensor capabilities with expanded algorithm suites for forward-based radars and passive optical sensors. The first algorithms for difficult threat and clutter mitigation will be introduced in Block 2006. The C2BMC Block 2006 will field additional combatant commander C2 suites, to include collaborative planning. Sensor netting will evolve to feature-aided discrimination and launch-on-remote capability.

- **Test and Targets:** BMDS wargames to help develop CONOPS and Tactics, Techniques and Procedures using U.S. military operators; Missile Defense Integration Exercises to measure BMDS interoperability and initial integration; and System Integration Flight Tests to provide the highest degree of realism possible to measure BMDS integration, support system capability assessments and provide validation data for models and simulations. Targets and Countermeasures activities for Block 2006 will include the development of full-up target systems to support BMDS and element testing; development of payload suites for Critical Measurements and Countermeasures (CMCM) flight tests and target risk reduction flights; and the maintenance, aging, surveillance, refurbishment and routine testing of existing Government Furnished Equipment (GFE) boosters.

Table 6: Block 2006 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2006	4	27	53	104	116	0	0	0	273	304
Hercules Block 2006	0	0	19	18	45	45	0	0	127	127
Joint Warfighter Support Block 2006	0	0	0	12	24	12	0	0	48	48
Test & Evaluation Block 2006	1	1	2	9	41	39	0	0	92	93
Targets & CM Block 2006	1	4	32	110	213	172	0	0	526	530
THAAD Block 2006	0	0	109	208	598	498	113	0	1525	1525
GMD Block 2006	2460	2109	1605	1774	1354	1235	0	0	5969	10538
Aegis BMD Block 2006	0	0	24	73	377	299	0	0	773	773
ABL Block 2006	0	0	10	86	150	79	81	55	461	461
BMDS Radars Block 2006	0	0	101	145	134	0	0	0	380	380
STSS Block 2006	55	232	276	285	285	204	75	35	1160	1447
TOTAL	2520	2372	2232	2823	3335	2583	270	90	11333	16225

*Numbers may not add exactly due to rounding.

Block 2008

The Block 2008 program of work represents a major step in the BMD System evolution. In this BMD System configuration, we plan to complete multiple layers of weapons and sensors, based on both fixed ground and mobile platforms, to counter the full spectrum of ballistic missile threats. This configuration will include C2BM components that enable truly integrated control of all system assets throughout the battle space. Primary development projects include (1) improving the BMD System performance by adding Boost phase weapons, to include the Airborne Laser and the kinetic energy BMDS Interceptor to the Test Bed; (2) improving the performance of all weapons by integrating space sensor platforms and fusing multi-sensor discrimination products; and (3) demonstrating (through flight testing) increased system effectiveness against evolving threat countermeasures. The following are several significant program objectives underpinning the budget request for Block 2008:

- **Boost:** Develop and deliver an improved second ABL aircraft, which includes new technologies with enhanced lethality and additional operational suitability. Weapons system design activities have already started with a Critical Design Review (CDR) planned for FY05, when we plan to begin aircraft modifications and weapons system development. We plan to deliver and test the second ABL in the BMDS Test Bed in late FY09. Develop and demonstrate, through flight-testing, a kinetic kill boost phase capability based on existing hardware and proven technology. This approach is fundamental to our goal of a robust BMD System and begins development of low-cost, multi-use interceptors to defend against threat missiles in the boost, midcourse, and exoatmospheric terminal phases of flight. The initial multi-use interceptor capability will be on a mobile ground-based platform while we investigate other basing and operational concepts. In parallel, we will initiate a space based Test Bed development to determine the feasibility of exploiting the inherent advantages of intercepting threat missiles from

space. We will begin developing a space-based kinetic energy interceptor in FY04, with initial, on-orbit testing to commence with three to five satellites in Block 2008.

- **Midcourse:** Conduct up to three GMD flight tests annually (FY08-09) to demonstrate advanced engineering and pre-planned equipment improvements for the boosters, interceptors, early warning and fire control radars, and BMC3 software builds. Similarly, demonstrate improved performance based on overall enhancements to BMD System integration, including the BMDS Interceptor and space sensors. Integrate Aegis Weapons System with AN/SPY-1 radar improvements to include the BMD signal processor, synthetic wide bandwidth applications, and advanced discrimination algorithms to engage both unitary and separating S/M/IRBM targets. We will also begin to integrate and test the BMDS Interceptor fired an Aegis warship.

- **Terminal:** Complete the development and testing of the THAAD weapon system in the endoatmospheric and exoatmospheric battle space against the allocated threat set. We are planning up to eight developmental and operational-type flight tests to stress interceptor, radar, and C2BM performance in realistic scenarios including advanced countermeasures.

- **Sensors:** Improve BMDS Family of Radar coverage, performance, flexibility and vulnerability within the context of the overall BMDS global sensor network. This will be accomplished by continuing to develop, test and assess advanced algorithms, assessing maturing radar technologies, and developing Block 2008 radar configurations, using the evolutionary, spiral approach to development. Continue space sensor (SSTS) integrated operations with other BMD elements and Test Bed activities with visible and IR tracking of a variety of ballistic missile threats. We plan to execute contract modifications in FY06 to improve the STSS ground station equipment to incorporate Block 2006 lessons-learned, and support enhanced BMDS C2BM development initiatives.

- **Test and Targets:** Robust Testing and Evaluation will continue to realistically simulate evolving threats while incorporating maturing BMD systems. As target development matures in Block 2008, capability-based targets and payload suites (to include new and more complex countermeasures) will be developed tested, and integrated into the BMDS testing program.

Table 7: Block 2008 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
C2BMC Block 2008	0	0	1	12	27	144	145	147	476	476
Hercules Block 2008	0	0	19	17	17	17	62	60	192	192
Joint Warfighter Support Block 2008	0	0	0	0	0	12	29	31	71	71
Test & Evaluation Block 2008	0	0	1	1	4	13	85	87	190	190
Targets & CM Block 2008	0	0	0	57	77	68	239	253	694	694
THAAD Block 2008	0	0	0	0	237	227	369	300	1134	1134
GMD Block 2008	0	0	0	0	0	0	878	877	1756	1756
AEGIS BMD Block 2008	0	0	0	116	186	322	470	386	1481	1481
ABL Block 2008	11	237	256	402	582	561	366	267	2435	2683
BMDS Radars Block 2008	0	0	0	0	0	136	102	22	261	261
STSS Blk 2008	0	0	0	0	0	82	177	89	348	348
BMDS Interceptor Block 2008	54	100	296	529	1013	1562	1939	1890	7229	7383
TOTAL	65	337	572	1134	2145	3146	4862	4409	16268	16669

*Numbers may not add exactly due to rounding.

Block 2010

Although the technical details of Block 2010 are less defined than near-term Block efforts, the Block 2010 program of work will continue spiral development projects for BMD System weapon and sensor improvements as well as platform integration initiatives. A major initiative is an advanced satellite configuration for STSS for precise threat tracking and discrimination support for the BMDS, and implementing the C2BM and communications improvements to assimilate and exchange this highly resolved sensor data with all BMD System elements and users. The following are several significant program objectives underpinning the budget request for Block 2010:

- **Boost:** Through spiral development of the Block 2008 capability, the Block 2010 BMDS Interceptor will have improvements in exoatmospheric performance and greater basing mode flexibility including adaptability to sea-based platforms. Develop and test an advanced space-based Test Bed to augment and/or replace the Block 2008 space-based Test Bed, and retire most, if not all, major risks in space-based, kinetic energy ballistic missile defense. Our longer-term goal is to develop low-cost enhanced BMDS multi-use interceptors that have the capability to defend against threat missiles in the boost, midcourse and exoatmospheric terminal phases of flight. Therefore, we are consolidating next generation interceptor (booster plus kill vehicle (KV)) development efforts into one BMDS interceptor program for multiple uses across the BMD System.

- **Midcourse:** Continue flight-testing of improved weapon and sensor components, and design, engineering and integration of an advanced BMDS Interceptor. Aegis BMD will incorporate prior Block developments into the Navy developed next generation open architecture Combat System.

- **Sensors:** Develop and launch a satellite with improved sensors integrated into the first common satellite bus, and develop and integrate advanced ground station equipment and software. The Block 2010 STSS will deliver a space-based capability to acquire, track and discriminate ballistic missiles based on larger aperture track sensors, increased vehicle lifetime, and increased, near-real-time on board data processing. The funding also includes launch services for Block 2010 satellites. C2BM funding for Block 2010 focuses on integrating SSTS data into the sensor net.

Table 8: Block 2010 Funding FY02-09 ($M Then-year)*

Project	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
AEGIS BMD Block 2010	0	0	0	0	0	8	104	145	257	257
STSS Block 2010/2012	179	55	24	44	232	565	750	1065	2680	2914
BMDS Interceptor Block 2010	0	0	0	0	97	146	585	974	1803	1803
TOTAL	179	55	24	44	329	719	1439	2184	4740	4974

*Numbers may not add exactly due to rounding.

Mission Area Investments

The remaining components of the WBS – which allow us to implement the BMDS across Blocks; enable expansion of capabilities in future Blocks; and develop capabilities not yet foreseen as part of a current or future Block – are collectively referred to as Mission Area Investments. Mission Area Investments provide a common foundation for the entire integrated BMDS. This terminology recognizes and affirms their inherent importance, as their collective progress will be critical to the success of the BMDS. These Mission Area Investments account for about $11.3 billion, or just over 20% of the total funding request across the current FYDP. Table 9 provides a detailed breakdown of funding for each Investment Activity.

Table 9: Mission Area Investments Funding FY02-09 ($M Then-year)*

Investment Activity	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FYDP FY04-09	TOTALS FY02-09
System Engineering	236	397	436	474	501	510	580	578	3079	3713
C2, BM & Communications	16	16	119	125	178	201	204	218	1045	1076
Test & Targets	359	332	338	332	328	352	316	333	1998	2688
International Programs	211	205	148	215	129	100	89	89	769	1185
Advanced Concepts	347	176	388	418	363	437	524	534	2664	3187
Program Operations	232	170	264	252	283	306	317	333	1754	2156
TOTAL	1400	1296	1692	1817	1783	1904	2029	2083	11309	14005

*Numbers may not add exactly due to rounding.

The following are several significant program objectives underpinning the budget request for the Mission Area Investments:

System Engineering: Our core Systems Engineering function—which covers our government, National Team, SETA and FFRDC personnel—defines, manages, and integrates all engineering development for the BMDS. These activities provide the technical expertise, tools, and facilities to develop the BMDS, as well as the first-rate intelligence and research capabilities that will guarantee the BMDS evolves in a way that is responsive to both known and anticipated threats. This major effort also includes the core focus-team in Countermeasures/Counter-Countermeasures (CM/CCM), BMD Modeling and Simulation projects, and a corporate lethality program.

C2, BM & Communications (C2BMC): Provides centralized technical and administrative management of the Command, Control, Battle Management, and Communications engineering effort, the Hercules project personnel, the Joint Warfighter Support team and the Joint National Integration Center (JNIC). C2BMC is a key effort because of the necessity to create interoperability between a wide variety of legacy and emerging systems over joint and coalition networks. This project includes the industry component of the National Team to develop the detailed engineer technical specifications for the C2BM and communications products. The Joint Warfighter project ensures that we consult with the larger DoD community about near and long-term issues regarding ballistic missile defense through seminars, wargames and exercises. The Hercules project develops the detection, tracking and discrimination algorithms to counter known and evolving missile threats. A physics-based Decision Architecture is also being developed to advance decision-theory in future BMDS C2BM concepts. The JNIC functions as the field-operating agency of MDA and maintains a world-class research, development, test and evaluation and rapid prototyping center. With secure communications and collaboration with the MDA community and premier high-performance computer for modeling and simulation tasks, the JNIC provides us an important tool to overcome engineering challenges in a timely fashion.

BMD Tests & Targets: Provides resources to define, integrate, test, demonstrate and evolve a multi-layered BMDS, comprising two primary projects: Test & Evaluation (T&E) and Targets and Countermeasures. Both projects maintain divisions of Core and Block-Specific efforts. Block Specific efforts for both projects are addressed in earlier portions of this Overview. Core functions provide for the implementation of test and target capabilities the BMDS across multiple Blocks; expand the capabilities of the BMDS in future Blocks beyond the FYDP; maintain a core infrastructure that supports development and testing efforts, and, develop capability not yet foreseen as part of a current or future block.

Specifically, the BMDS Measurements Program augments the BMD System Test Program by providing critical data and analysis to support block development. Under the Measurements Program, all MDA data requirements are collected, prioritized, validated, and then allocated to Tests of Opportunity (TOOs) or used to develop dedicated flight tests designated as Critical Measurements and Countermeasure (CMCM) flight tests.

The T&E Core Infrastructure Program provides the resources for the development, sustainment, and modernization of corporate infrastructure facilities of the BMDS test bed to support system and element-level testing. This includes support at nine (9) BMD-unique ground test facilities, BMD-unique range assets at various DoD test ranges, airborne sensors, data

collection assets, and special test equipment. All of these assets provide valuable program risk reduction and test implementation capability in support of BMDS activities. Individual BMDS elements pay only the direct costs associated with their specific test efforts. Target requirements development and certification that targets satisfy test objectives are addressed through the T&E Core Infrastructure Program.

The Targets and Countermeasures project provides core and mission support (base operations, rent, equipment, facility maintenance, etc.), travel, government civilian salaries, and technical and program management expertise critical to support each block development capability.

International Programs: The President has underscored the importance of working with other countries to develop missile defenses and defend against the ballistic missile threat. This investment area sustains cooperative R&D programs with Israel by continuing support for the Arrow program; with Japan and the Standard Missile 3 nosecone improvements described above; and with the Russians for the RAMOS project. Our international work is consistent with our vision, and supports the achievement of our goals.

Advanced Concepts: Continue several S&T initiatives to increase BMD system firepower and sensor capability, and to extend the footprint of terminal systems. In FY04, Advanced Technology efforts will continue improvements in the Miniature Kill Vehicle (MKV) Program working toward a flight test in FY05, and will develop and test new Early Detection and Tracking (ELDT) capabilities. We are also focusing on Laser/LADAR technologies tracking, weapon guidance, and imaging, as well as investing funding in technologies that may lead to a space-based high-power laser demonstration. This funding will support research into highly advanced solid-state and chemical laser concepts, remote laser kinetic weapon guidance, and new detector concepts for laser radars.

Program Operations: Our Program Operations expenses are primarily for government personnel performing management support activities, contractors that assist in performing these activities, and O&M-like costs associated with facilities operations and maintenance, supplies and equipment, communications and printing, travel and training, and information technology management. The activities are performed at the MDA, the Army Space and Missile Defense Command, the Army PEO for Air and Missile Defense, the Navy PEO for Integrated Warfare Systems, and PMS 452, and several major Air Force System Commands and Laboratories.

The key to Program Operations activities is that they allow consolidation of common support functions across the program. Typical support includes accounting and financial management services, budgetary and fiscal policy (e.g., guidance on budget submissions, budget execution, and related financial reporting), program integration, centralized cost estimating, earned-value management, the command's audit activity, contracting, information systems support, legal services, physical and program security (which has seen dramatic growth since 9/11), and mission assurance. Facilities maintenance includes all rents and utilities, supplies, equipment, safety, security (e.g., facility entry control, CCTV and alarm monitoring, badge issue), and service support for operational and maintenance activities. FY04 Program Operations totals $264 million. Note that these funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source.

VII. PRESIDENT'S BUDGET SUBMISSION AND ORGANIZATION

Our maturation of internal management practices, specifically the emphasis on System-level (Block) management, has led to an improved organization of the budget submission. This budget submission adds focus on the BMDS Blocks and the respective block configurations of the specific weapons, sensors, and command and control "tools" (e.g., Block 2004 of the Ground-based Midcourse Defense element, or Block 2006 of the Aegis BMD element) as requested in the 2003 Defense Authorization Act. This section is intended to facilitate navigation of the new organization of our budget Program Elements and budget justification documents.

Table 10: FY03 to FY04 Program Element Structure Revisions

FY03 PE Title	FY03 PE Number	FY04 PE Title	FY04 PE Number	Comments
BMDS	0603880C	BMDS Core	0603890C	Core effort to define Block capabilities
		BMDS Products	0603889C	BMDS equipment to develop and field a Block
		BMD Test & Targets	0603888C	T&E planning, ranges, platforms, and events; and target & payload suite development and testing
Terminal	0603881C	Same		
Midcourse	0603882C	Same		
Boost	0603883C	Same		Contains only the Airborne Laser program in 04.
		BMDS Interceptor	0603886C	KE Boost program; transferred from Boost PE
Sensors	0603884C	Same		
Technology	0603175C	Same		
		ACES	0603879C	Classified program content
Mgmt HQ/ PRMRF	0901598C/ 0901585C	Same		

Table 10, above, summarizes the modifications to our Program Elements (PEs). Three principal modifications were to (1) decompose the BMD System PE (0603880C) into three separate PEs: one for BMDS Core, BMD Products, and BMD Test and Targets, as described below; (2) add a new PE for the BMDS Interceptor to capture all resources for the Kinetic Energy Boost program development; and (3) add a new PE to segregate our Advanced Concepts, Evaluations and Systems (ACES) (classified program content).

These revisions improve overall transparency into the budget request for the entire BMD program of work. Our new Work Breakdown Structure is our central management construct and therefore we are incorporating the WBS as the major organizing principle for this budget.

Table 11, below, provides a crosswalk of our budget request by both Program Element and WBS with the detailed funding identified for the FY04-09 FYDP. Each major capability block includes all of the funding, from multiple PEs as appropriate, for development and testing of a complete and integrated capability. This would include all of the specific weapons, sensors, command and control, integration and operations equipment, and testing resources that are discernable uniquely for that Block of work. For example, Block 2004 comprises GMD and Aegis BMD development (both funded from the Midcourse (0603882C) PE), ABL development

funded from the Boost (0603883C) PE, as well as complementary battle management and command and control products funded from the BMDS Products (0603889C) PE.

Table 11: Mapping PEs Across BMDS Blocks FYDP 04-09 ($M)*

		BMDS Funding for FYDP 04-09					
PE Title	PE Number	Capability Blocks				Mission Area Investments	PE Totals
		Block 2004	Block 2006	Block 2008	Block 2010		
BMD Core	0603890C	0	0	0	0	3649	3649
BMD Products	0603889C	276	448	739	0	652	2116
BMD Test & Targets	0603888C	438	618	884	0	2041	3981
Terminal	0603881C	1322	1525	1134	0	475	4456
Midcourse	0603882C	3713	6741	3237	257	415	14362
Boost	0603883C	494	461	2435	0	143	3532
Sensors	0603884C	0	1540	609	2680	336	5166
BMDS Interceptor	0603886C	0	0	7229	1803	130	9161
Technology	0603175C	0	0	0	0	1490	1490
ACES	0603879C	0	0	0	0	1205	1205
Mgmt Hq/PRMRF	0901598C/ 0901585C	0	0	0	0	773	773
Block Totals		6242	11333	16268	4740	11309	49891

*Numbers may not add exactly due to rounding.

Similarly, a single PE funds multiple Blocks and "common" mission area investment activities. For example, Midcourse PE funds program content associated directly with every Block as well as broad mission area investments (e.g., international cooperation not unique to any one Block). Our R-documents budget materials explain each linkage from the PEs to the WBS projects. Previously designated Congressional special interest items remain visible in this structure, as directed by statute**.**

SUMMARY

Within each Block, we are placing a high investment priority on the most mature technologies that can provide capabilities in the near term, and on those promising technologies that, over the longer term, will provide the most effective capabilities for an integrated, comprehensive BMDS. Midcourse investment is high in Blocks 2004 and 2006, while funding for the Boost programs increases significantly in Block 2008. For Block 2004, the investment priorities are Ground-based Midcourse (GMD) interceptors, providing the first real capabilities against long-range threats; sensors; demonstrating the lethal shootdown capability of the Airborne Laser (ABL); the sea-based Aegis BMD system; and an initial C2BM capability to integrate the BMDS elements. In Block 2006, a significant priority is the integration of various elements into the first single, integrated BMDS. For Block 2008, the focus will be on layering the BMDS with a Boost phase capability. For Block 2010, the funding priority is for advanced sensor development.

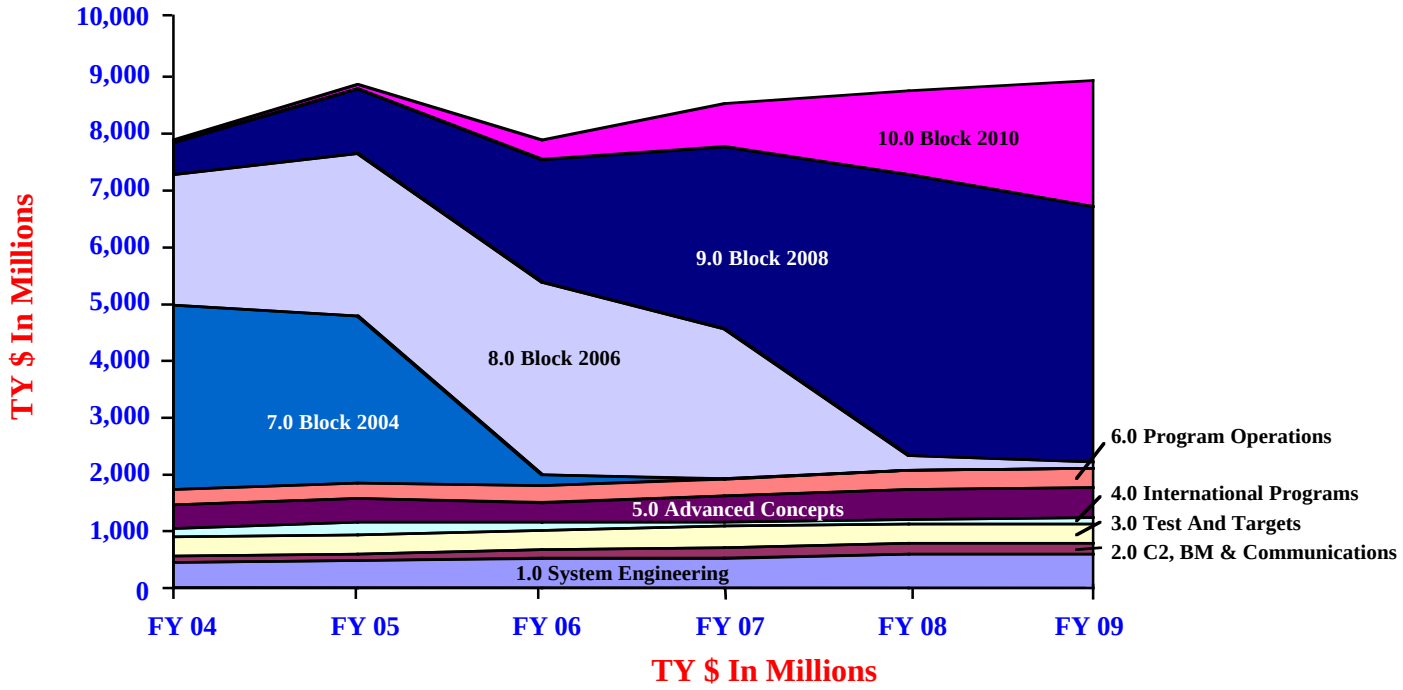
In summary, we have an aggressive RDT&E program that is on track to develop a set of missile defense capabilities for initial defensive operations. Our recent testing and analysis gives us confidence in responding to the President's December direction to deploy an initial capability, and we will continue robust RDT&E to build on that initial capability in an evolutionary manner.

VIII. ACRONYMS

ABL	Airborne Laser
ACD	Adversary Capability Document
ACES	Arrow Concepts, Evaluations and Systems
ALI	Aegis Leap Intercept
ASIP	Arrow System Improvement Program
AWS	Aegis Weapon System
BMDS	Ballistic Missile Defense System
BMC2	Battle Management/Comand and Control
BMC3	Battle Management/Comand, Control and Communications
BSP	BMD Signal Processor
C2BMC	Command and Control/Battle Management/Communications
CCTV	Closed-circuit Television
CDR	Critical Design Review
CM/CCM	Countermeasure/Counter-Countermeasure
DoD	Department of Defense
DSB	Defense Science Board
DSP	Defense Support Program
ECS	Element Capability Specifications
EKV	Exoatmospheric Kill Vehicle
ELDT	Early Launch Detection and Tracking
EWR	Early Warning Radar
FFRDCs	Federally Funded Research & Development Centers
FOR	Family of Radar
FYDP	Future Years Defense Program
GBI	Ground-Based Interceptor
GCCS	Global Command and Control System
GEM	Guidance Enhancement
GIG	Global Information Grid
GMD	Ground-based Midcourse Defense
IMP	Integrated Master Plan
JNIC	Joint National Integration Center
LADAR	Laser Detection and Ranging/ Laser Radar
LRBM	Long Range Ballistic Missile
MDA	Missile Defense Agency
MDIE	Missile Defense Integration Exercises
MDNT	Missile Defense National Team
MDSG	Missile Defense Support Group
MDWG	Missile Defense Working Group
MEADS	Medium Extended Air Defense System
MIDS	Management Initiative Decisions
MKV	Miniature Kill Vehicle
MRBM	Medium Range Ballistic Missile
NFIRE	Near Field Infrared Experiment
OMB	Office of Management and Budget
PAC-3	Patriot Advanced Capability-3
PART	Program Assessment Rating Tool

RAMOS	Russian American Observation Satellites
SBIRS-Low	Space-Based Infrared Radar System-Low (cancelled)
SBX	Sea-Based X-Band Radar
SCS	System Capability Specification
SE	System Engineering
SEC	DoD Senior Executive Council
SETA	Scientific Engineering and Technical Assistance
SIFT	System Integration Flight Test
SM-3	Standard Missile-3
SRBM	Short Range Ballistic Missile
SRR	System Requirements Review
STSS	Space Tracking and Surveillance System (replace SBIRS-Low)
T&E	Test and Evaluation
THAAD	Theater High Altitude Air Defense
TOG	Technical and Operational Goals
TTPs	Tactics, Techniques and Procedures
UEWR	Upgraded Early Warning Radar
WBS	Work Breakdown Structure
WMD	Weapons of Mass Destruction
XBR	X-Band Radar

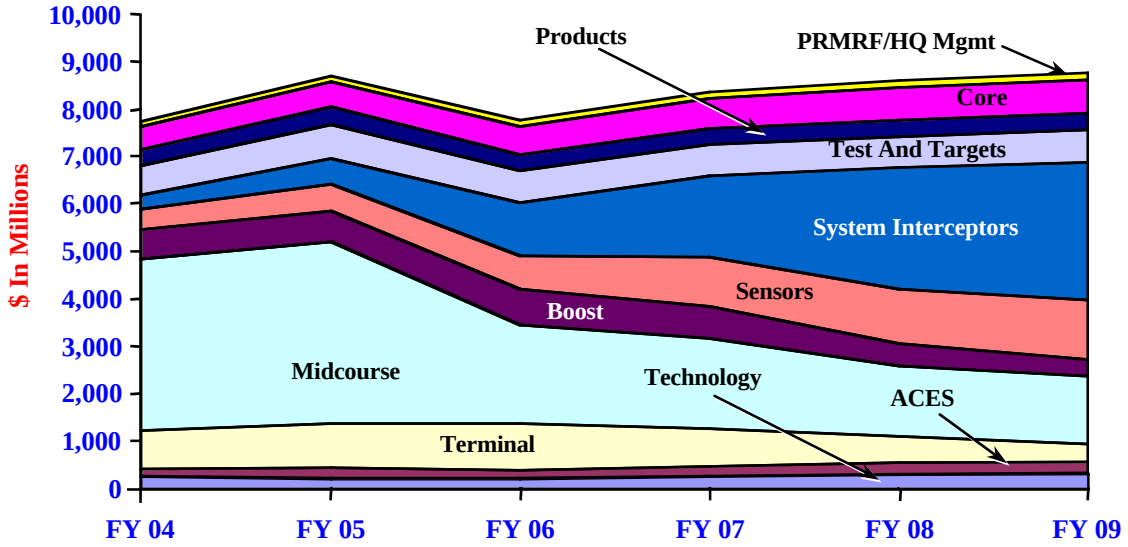
MDA FY 04 BUDGET ESTIMATES BY WORK BREAKDOWN STRUCTURE



Work Breakdown Structure	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	Total FY 04-09
1.0 System Engineering	436	474	501	510	580	578	3,079
2.0 C2, BM & Communications	119	125	178	201	204	218	1,045
3.0 Test And Targets	338	332	328	352	316	333	1,998
4.0 International Programs	148	215	128	100	89	89	769
5.0 Advanced Concepts	388	418	363	437	524	534	2,664
6.0 Program Operations	264	252	283	306	317	333	1,754
7.0 Block 2004	3,212	2,868	163	0	0	0	6,242
8.0 Block 2006	2,232	2,823	3,335	2,583	270	90	11,333
9.0 Block 2008	572	1,134	2,145	3,146	4,862	4,409	16,268
10.0 Block 2010	24	44	329	719	1,439	2,184	4,740
Program Total	7,731	8,687	7,754	8,353	8,601	8,766	49,891

Note: Numbers May Not Add Exactly Due To Rounding

MDA FY 04 BUDGET ESTIMATES BY PROGRAM ELEMENT



TY $ In Millions

Program Element	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	Total FY 04-09
Technology	241	206	201	248	288	306	1,490
ACES	152	217	166	194	242	234	1,205
Terminal	810	924	986	806	558	372	4,456
Midcourse	3,613	3,841	2,079	1,909	1,482	1,438	14,362
Boost	626	654	755	666	477	354	3,532
Sensors	438	563	707	1,043	1,153	1,262	5,166
System Interceptors	301	541	1,127	1,730	2,558	2,904	9,161
Test And Targets	614	719	668	650	649	681	3,981
Products	344	385	334	343	349	361	2,116
Core	484	522	604	629	703	707	3,649
PRMRF/HQ Mgmt	108	115	127	135	142	147	774
Program Total	7,731	8,687	7,754	8,353	8,601	8,766	49,891

Note: Numbers May Not Add Exactly Due To Rounding